```
  of commercial gateways or other similar uses is prohibited and may
  result in loss of user privileges and other penalties.

  * * * * * * * * * * * * * STN  Columbus  * * * * * * * * * * * * * * *

FILE 'HOME' ENTERED AT 12:06:00 ON 15 SEP 2004

=> file .meeting
'EVENTLINE' IS NOT A VALID FILE NAME
Enter "HELP FILE NAMES" at an arrow prompt (=>) for a list of files
that are available.  If you have requested multiple files, you can
specify a corrected file name or you can enter "IGNORE" to continue
accessing the remaining file names entered.
ENTER A FILE NAME OR (IGNORE):ignore
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                         ENTRY    SESSION
FULL ESTIMATED COST                                       0.21       0.21

FILE 'AGRICOLA' ENTERED AT 12:06:13 ON 15 SEP 2004

FILE 'BIOTECHNO' ENTERED AT 12:06:13 ON 15 SEP 2004
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=> microarray and covalent and (coat or immobilization or immobilized)
L1            0 FILE AGRICOLA
L2           12 FILE BIOTECHNO
L3            0 FILE CONFSCI
L4            0 FILE HEALSAFE
L5            0 FILE IMSDRUGCONF
L6            4 FILE LIFESCI
L7            0 FILE MEDICONF
L8           13 FILE PASCAL

TOTAL FOR ALL FILES
L9           29 MICROARRAY AND COVALENT AND (COAT OR IMMOBILIZATION OR IMMOBILIZ
                ED)

=> l9 and (covalent(8A)(immobilized or immobilization or coating))
L10           0 FILE AGRICOLA
L11           3 FILE BIOTECHNO
L12           0 FILE CONFSCI
```

```
L13           0 FILE HEALSAFE
L14           0 FILE IMSDRUGCONF
L15           1 FILE LIFESCI
L16           0 FILE MEDICONF
L17           7 FILE PASCAL

TOTAL FOR ALL FILES
L18          11 L9 AND (COVALENT(8A)(IMMOBILIZED OR IMMOBILIZATION OR COATING))

=> dup rem
ENTER L# LIST OR (END):l18
DUPLICATE IS NOT AVAILABLE IN 'IMSDRUGCONF, MEDICONF'.
ANSWERS FROM THESE FILES WILL BE CONSIDERED UNIQUE
PROCESSING COMPLETED FOR L18
L19           10 DUP REM L18 (1 DUPLICATE REMOVED)

=> d l19 ibib abs total

L19   ANSWER 1 OF 10  PASCAL  COPYRIGHT 2004 INIST-CNRS. ALL RIGHTS RESERVED.
      on STN
ACCESSION NUMBER:         2004-0372760   PASCAL
COPYRIGHT NOTICE:         Copyright .COPYRGT. 2004 INIST-CNRS. All rights
                          reserved.
TITLE (IN ENGLISH):       Carbohydrate chips for studying high-throughput
                          carbohydrate-protein interactions
AUTHOR:                   PARK Sungjin; LEE Myung-Ryul; PYO Soon-Jin; SHIN Injae
CORPORATE SOURCE:         Department of Chemistry, Yonsei University, Seoul
                          120-749, Korea, Republic of
SOURCE:                   Journal of the American Chemical Society, (2004),
                          126(15), 4812-4819
                          ISSN: 0002-7863  CODEN: JACSAT
DOCUMENT TYPE:            Journal
BIBLIOGRAPHIC LEVEL:      Analytic
COUNTRY:                  United States
LANGUAGE:                 English
NOTE:                     ref. et notes dissem.
AVAILABILITY:             INIST-551, 354000111658010290
AN    2004-0372760   PASCAL
CP    Copyright .COPYRGT. 2004 INIST-CNRS. All rights reserved.
AB    Carbohydrate-protein interactions play important biological roles in
      living organisms. For the most part, biophysical and biochemical methods
      have been used for studying these biomolecular interactions. Less
      attention has been given to the development of high-throughput methods to
      elucidate recognition events between carbohydrates and proteins. In the
      current effort to develop a novel high-throughput tool for monitoring
      carbohydrate-protein interactions, we prepared carbohydrate
      microarrays by immobilizing maleimide-linked carbohydrates on
      thiol-derivatized glass slides and carried out lectin binding experiments
      by using these microarrays. The results showed that
      carbohydrates with different structural features selectively bound to the
      corresponding lectins with relative binding affinities that correlated
      with those obtained from solution-based assays. In addition, binding
      affinities of lectins to carbohydrates were also quantitatively analyzed
      by determining IC.sub.5.sub.0 values of soluble carbohydrates with the
      carbohydrate microarrays. To fabricate carbohydrate chips that
      contained more diverse carbohydrate probes, solution-phase parallel and
      enzymatic glycosylations were performed. Three model disaccharides were
      in parallel synthesized in solution-phase and used as carbohydrate probes
      for the fabrication of carbohydrate chips. Three enzymatic glycosylations
      on glass slides were consecutively performed to generate carbohydrate
      microarrays that contained the complex oligosaccharide, sialyl
      Le.sup.x. Overall, these works demonstrated that carbohydrate chips could
      be efficiently prepared by covalent immobilization of
      maleimide-linked carbohydrates on the thiol-coated glass slides and
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applied for the high-throughput analyses of carbohydrate-protein interactions.

L19 ANSWER 2 OF 10 PASCAL COPYRIGHT 2004 INIST-CNRS. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 2003-0406556 PASCAL
COPYRIGHT NOTICE: Copyright .COPYRGT. 2003 INIST-CNRS. All rights reserved.
TITLE (IN ENGLISH): Optimization of sol-gel formulations and surface treatments for the development of pin-printed protein **microarrays**
AUTHOR: RUPCICH Nicholas; GOLDSTEIN Aaron; BRENNAN John D.
CORPORATE SOURCE: Department of Chemistry, McMaster University, Hamilton, Ontario, L8S 4M1, Canada
SOURCE: Chemistry of materials, (2003), 15(9), 1803-1811, 38 refs.
ISSN: 0897-4756
DOCUMENT TYPE: Journal
BIBLIOGRAPHIC LEVEL: Analytic
COUNTRY: United States
LANGUAGE: English
AVAILABILITY: INIST-21957, 354000118103980060
AN 2003-0406556 PASCAL
CP Copyright .COPYRGT. 2003 INIST-CNRS. All rights reserved.
AB We report on the development and optimization of a sol-gel-based method for the preparation of protein **microarrays** that has the potential to allow pin-spotting of active proteins for high throughput multianalyte biosensing and screening of protein-small molecule interactions. **Microarrays** were printed onto bare and chemically modified surfaces using the commercially available sol-gel precursors tetraethyl orthosilicate and sodium silicate and the newly developed biocompatible sol-gel precursors monosorbitol silane and diglyceryl silane. Parameters such as the type and level of the buffer, the water-to-silane ratio, and the solution pH were also varied to assess the factors that controlled the production of optimal **microarrays**. Such factors included the ability to pin-print without clogging of the pins, the adhesion of the sol-gel spot to the substrate, the dimensions of the microspot, and the stability of both the microspot and the entrapped protein. The microarraying of active antibodies was successfully demonstrated using an optimized combination of parameters, and such arrays were shown to have significantly higher signal-to-background levels than conventional arrays formed by **covalent immobilization** of antibodies on chemically derivatized surfaces.

L19 ANSWER 3 OF 10 BIOTECHNO COPYRIGHT 2004 Elsevier Science B.V. on STN DUPLICATE

ACCESSION NUMBER: 2003:36211425 BIOTECHNO
TITLE: A versatile multi-platform biochip surface attachment chemistry
AUTHOR: Manning M.; Harvey S.; Galvin P.; Redmond G.
CORPORATE SOURCE: G. Redmond, Nanotechnology Group, NMRC, Lee Maltings, Ireland.
E-mail: gredmond@nmrc.ie
SOURCE: Materials Science and Engineering C, (03 MAR 2003), 23/3 (347-351), 4 reference(s)
ISSN: 0928-4931
PUBLISHER ITEM IDENT.: S0928493102002850
DOCUMENT TYPE: Journal; Article
COUNTRY: United Kingdom
LANGUAGE: English
SUMMARY LANGUAGE: English
AN 2003:36211425 BIOTECHNO
AB A versatile DNA spotting and **immobilization** method for

covalent attachment of amino-modified probe oligonucleotides in **microarray** format at glass, native silicon dioxide and CVD silicon nitride substrates is reported. Optimal probe spot printing and attachment buffers are identified for each substrate. Relative areal densities of **immobilized** probes as measured by epi-fluorescence microscopy vary with substrate type reflecting differences in surface morphology and chemistry. Target oligonucleotide hybridization occurs at glass and nitride supported probe **microarrays** in an efficient and reproducible manner with excellent measured fluorescence signal-to-background. .COPYRGT. 2002 Elsevier Science B.V. All rights reserved.

L19 ANSWER 4 OF 10 LIFESCI COPYRIGHT 2004 CSA on STN
ACCESSION NUMBER: 2003:101740 LIFESCI
TITLE: Impact of surface chemistry and blocking strategies on DNA **microarrays**
AUTHOR: Taylor, S.; Smith, S.; Windle, B.; Guiseppi-Elie, A.
CORPORATE SOURCE: Center for Bioelectronics, Biosensors and Biochips, Department of Medicinal Chemistry and Department of Chemical Engineering, Virginia Commonwealth University, PO Box 843038, 601 West Main Street, Richmond, VA 23284-3038, USA; E-mail: guiseppi@vcu.edu
SOURCE: Nucleic Acids Research [Nucleic Acids Res.], (20030000) vol. 31, no. 16, e87.
ISSN: 0305-1048.
DOCUMENT TYPE: Journal
FILE SEGMENT: N
LANGUAGE: English
SUMMARY LANGUAGE: English
AB The surfaces and **immobilization** chemistries of DNA **microarrays** are the foundation for high quality gene expression data. Four surface modification chemistries, poly-L-lysine (PLL), 3-glycidoxypropyltrimethoxysilane (GPS), DAB- AM-poly(propyleminime hexadecaamine) dendrimer (DAB) and 3- aminopropyltrimethoxysilane (APS), were evaluated using cDNA and oligonucleotide sub-arrays. Two un-silanized glass surfaces, RCA-cleaned and immersed in Tris- EDTA buffer were also studied. DNA on amine-modified surfaces was fixed by UV (90 mJ/cm super(2)), while DNA on GPS-modified surfaces was **immobilized** by **covalent** coupling. Arrays were blocked with either succinic anhydride (SA), bovine serum albumin (BSA) or left unblocked prior to hybridization with labeled PCR product. Quality factors evaluated were surface affinity for cDNA versus oligonucleotides, spot and background intensity, spotting concentration and blocking chemistry. Contact angle measurements and atomic force microscopy were preformed to characterize surface wettability and morphology. The GPS surface exhibited the lowest background intensity regardless of blocking method. Blocking the arrays did not affect raw spot intensity, but affected background intensity on amine surfaces, BSA blocking being the lowest. Oligonucleotides and cDNA on unblocked GPS-modified slides gave the best signal (spot-to-background intensity ratio). Under the conditions evaluated, the unblocked GPS surface along with amine **covalent** coupling was the most appropriate for both cDNA and oligonucleotide **microarrays**.

L19 ANSWER 5 OF 10 PASCAL COPYRIGHT 2004 INIST-CNRS. ALL RIGHTS RESERVED. on STN
ACCESSION NUMBER: 2003-0001164 PASCAL
TITLE (IN ENGLISH): Protein **microarrays** on ITO surfaces by a direct **covalent** attachment scheme
AUTHOR: NG H. T.; FANG A.; HUANG L.; LI S. F. Y.
CORPORATE SOURCE: Department of Chemistry National University of Singapore, S117543, Singapore, Singapore
SOURCE: Langmuir, (2002), 18(16), 6324-6329, 33 refs.
ISSN: 0743-7463
DOCUMENT TYPE: Journal

BIBLIOGRAPHIC LEVEL: Analytic
COUNTRY: United States
LANGUAGE: English
AVAILABILITY: INIST-20642
AN 2003-0001164 PASCAL
AB We describe the use of an indium tin oxide (ITO) thin film on a solid support serving as an effective generic **immobilization** platform to achieve one-step direct **covalent** attachment of arrayed proteins with good reproducibility and uniformity, Potential functional analyses on these surfaces involving protein-protein and protein-ligand interactions have been demonstrated. We also show that the approach can be adapted, via a photolithography-derived microwell route, to produce high-density protein **microarrays** which typically could accommodate a significantly higher density while occupying a comparatively smaller footprint than that achievable using currently existing high-precision robotic microarrayer systems, suggesting its potential applications in simultaneous parallel biological assays.

L19 ANSWER 6 OF 10 BIOTECHNO COPYRIGHT 2004 Elsevier Science B.V. on STN
ACCESSION NUMBER: 2002:34411501 BIOTECHNO
TITLE: Selective **immobilization** of proteins to self-assembled monolayers presenting active site-directed capture ligands
AUTHOR: Hodneland C.D.; Lee Y.-S.; Min D.-H.; Mrksich M.
CORPORATE SOURCE: M. Mrksich, Department of Chemistry, University of Chicago, Chicago, IL 60637, United States. E-mail: mmrksich@midway.uchicago.edu
SOURCE: Proceedings of the National Academy of Sciences of the United States of America, (16 APR 2002), 99/8 (5048-5052), 24 reference(s)
CODEN: PNASA6 ISSN: 0027-8424
DOCUMENT TYPE: Journal; Conference Article
COUNTRY: United States
LANGUAGE: English
SUMMARY LANGUAGE: English
AN 2002:34411501 BIOTECHNO
AB This paper describes a method for the selective and **covalent immobilization** of proteins to surfaces with control over the density and orientation of the protein. The strategy is based on binding of the serine esterase cutinase to a self-assembled monolayer presenting a phosphonate ligand and the subsequent displacement reaction that covalently binds the ligand to the enzyme active site. Surface plasmon resonance (SPR) spectroscopy showed that cutinase binds irreversibly to a monolayer presenting the capture ligand at a density of 1% mixed among tri(ethylene glycol) groups. The **covalent immobilization** is specific for cutinase, and the glycolterminated monolayer effectively prevents unwanted nonspecific adsorption of proteins. To demonstrate that the method could be used to immobilize proteins of interest, a cutinase-calmodulin fusion protein was constructed and **immobilized** to the monolayer. SPR showed that calcineurin selectively associated with the **immobilized** calmodulin. This capture ligand **immobilization** method combines the advantages that the **immobilization** reaction is highly selective for the intended protein, the tether is **covalent** and, hence, stable, and the method avoids the need for synthetic modification and rigorous purification of proteins before **immobilization**. These characteristics make the method well suited to a range of applications and, in particular, for constructing protein **microarrays**.

L19 ANSWER 7 OF 10 PASCAL COPYRIGHT 2004 INIST-CNRS. ALL RIGHTS RESERVED. on STN
ACCESSION NUMBER: 2002-0575581 PASCAL
TITLE (IN ENGLISH): Surface characterization of a silicon-chip-based DNA

microarray

AUTHOR: LENIGK R.; CARLES M.; IP N. Y.; SUCHER N. J.
CORPORATE SOURCE: Biotechnology Research Institute Department of Biology Hong Kong Univ. of Sci. and Technol., Kowloon, SAR, Hong Kong
SOURCE: Langmuir, (2001), 17(8), 2497-2501, 27 refs. ISSN: 0743-7463
DOCUMENT TYPE: Journal
BIBLIOGRAPHIC LEVEL: Analytic
COUNTRY: United States
LANGUAGE: English
AVAILABILITY: INIST-20642
AN 2002-0575581 PASCAL
AB The **immobilization** of DNA (deoxyribonucleic acid) on solid supports is a crucial step for any application in the field of DNA **microarrays**. It determines the efficacy of the hybridization and influences the signal strength for the detection. We used solid supports made from silicon wafers as an alternative substrate to the commonly used microscope glass slides. The **covalent immobilization** of thiol-terminated DNA oligonucleotides on self-assembled layers of(3-mercaptopropyl)trimethoxysilane (MPTS) by disulfide bond formation was investigated. Contact angle measurement, variable angle spectral ellipsometry (VASE), X-ray photoelectron spectroscopy (XPS), and atomic force microscopy (AFM) were used to characterize the changing properties of the surface during the DNA array fabrication. During wafer processing the contact angle changed from 3° for the hydroxylated surface to 48.5° after deposition of MPTS. XPS data demonstrated that all sulfur in the MPTS layer was present in the form of reduced SH or S-S groups. VASE measurements indicated a layer thickness of 57.8 A for the **immobilized** 16 base oligonucleotides including a 18 carbon atom spacer located between the disulfide bond and the oligomer. AFM was used to characterize the DNA layer before and after hybridization to a complementary target. The data recorded after hybridization revealed a sharp increase in particle size from 89 nm2 to a mean value of 363 nm2. Fluorescence microscopy was used to monitor the hybridization of a fluorescently labeled DNA target to the **immobilized** probe. The heat stable disulfide-linkage formed during the oligonucleotide **immobilization** allowed the stripping of complementary DNA targets as well as rehybridization. These data show the advantages and applicability of silicon wafers that have been processed with CMOS (complementary metal oxide semiconductor) compatible processes as solid support in DNA technology. This approach offers the possibility of integration with other silicon-based components such as PCR microreactors and capillary electrophoresis units into a "lab-on-a-chip".

L19 ANSWER 8 OF 10 PASCAL COPYRIGHT 2004 INIST-CNRS. ALL RIGHTS RESERVED. on STN
ACCESSION NUMBER: 2002-0196328 PASCAL
COPYRIGHT NOTICE: Copyright .COPYRGT. 2002 INIST-CNRS. All rights reserved.
TITLE (IN ENGLISH): **Covalent** strategy for **immobilization** of DNA-microspots suitable for **microarrays** with label-free and time-resolved optical detection of hybridization
Miniaturization and chip technology in analytical chemistry
AUTHOR: JUNG A.; STEMMLER I.; BRECHT A.; GAUGLITZ G.
KITAMORI Takehito (ed.)
CORPORATE SOURCE: Institute of Physical and Theoretical Chemistry, University of Tuebingen, Auf der Morgenstelle 8, 72076 Tuebingen, Germany, Federal Republic of; Cytion SA Biopole, Ch. des Croisettes 22, 1066 Epalinges, Switzerland
Department of Applied Chemistry, School of

Engineering, The University of Tokyo, 7-3-1 Hongo, Kunkyo-ku, Tokyo 113-8658, Japan
SOURCE: Fresenius' journal of analytical chemistry, (2001), 371(2), 128-136, 36 refs.
ISSN: 0937-0633
DOCUMENT TYPE: Journal
BIBLIOGRAPHIC LEVEL: Analytic
COUNTRY: Germany, Federal Republic of
LANGUAGE: English
AVAILABILITY: INIST-853, 354000096406090060
AN 2002-0196328 PASCAL

AB Sequence-specific detection and quantification of nucleic acids are central steps in many molecular biology procedures which have also been transferred to chip-based procedures. Hybridization-based assays can be used to quantify and discriminate between DNA target sequences down to the level of single base mismatches. Arrays of DNA probes **immobilized** on a support enable simultaneous testing of multiple sequences of a single sample. DNA arrays can be produced either by in-situ synthesis of oligonucleotides or by **immobilization** of pre-assembled DNA probes. **Covalent** and directed **immobilization** improves the reproducibility and stability of DNA arrays. This is especially interesting with repeated use of transducers or chips. Procedures are described for effective **covalent immobilization** of pre-assembled amino-linked oligonucleotides, by use of ink-jet techniques, on a modified and heated glass surface, with addressable surface areas ranging from 0.01 mm.sup.2 to a few mm.sup.2. Almost immediate evaporation of the spotted droplets on the heated surfaces leads to very high surface hybridization capacities. The surfaces are suitable for use with a label-free detection method - reflectometric interference spectroscopy (RIfS). It is shown that hybridization capacity and non-specific interaction at these DNA-surfaces can be characterized by use of RIfS. With a consumption of less than 80 ng.mm.sup.-.sup.2 oligonucleotide and a specific hybridization capacity of more than 300 fmol mm.sup.-.sup.2, the activated aminodextran procedure was usually suitable for setting up a DNA array with label-free detection. Non-specific interactions with random oligomers or protein (ovalbumin) were low. Up to 150 repeated regenerations (stripping) of the surfaces by acid treatment and denaturing agents, and 50 days of storage, have been possible without significant loss of hybridization capacity.

L19 ANSWER 9 OF 10 BIOTECHNO
ACCESSION NUMBER: 1999:29024605 BIOTECHNO
TITLE: **Immobilization** of oligonucleotides onto a glass support via disulfide bonds: A method for preparation of DNA **microarrays**
AUTHOR: Rogers Y.-H.; Jiang-Baucom P.; Huang Z.-J.; Bogdanov V.; Anderson S.; Boyce- Jacino M.T.
CORPORATE SOURCE: M.T. Boyce-Jacino, Orchid Biocomputer, Inc., Alpha Center, Johns Hopkins Bayview Res. Campus, 5210 Eastern Avenue, Baltimore, MD 21224, United States. E-mail: mbj@orchidbio.com
SOURCE: Analytical Biochemistry, (01 JAN 1999), 266/1 (23-30), 42 reference(s)
CODEN: ANBCA2 ISSN: 0003-2697
DOCUMENT TYPE: Journal; Article
COUNTRY: United States
LANGUAGE: English
SUMMARY LANGUAGE: English
AN 1999:29024605 BIOTECHNO
AB The **covalent** attachment of disulfide-modified oligonucleotides to a mercaptosilane-modified glass surface is described. This method provides an efficient and specific **covalent** attachment chemistry for **immobilization** of DNA probes onto a solid

support. Glass slides were derivatized with 3- mercaptopropyl silane for attachment of 5-prime disulfide-modified oligonucleotides via disulfide bonds. An attachment density of approximately 3 x 10.sup.5 oligonucleotides/μm.sup.2 was observed. Oligonucleotides attached by this method provided a highly efficient substrate for nucleic acid hybridization and primer extension assays. In addition, we have demonstrated patterning of multiple DNA probes on a glass surface utilizing this attachment chemistry, which allows for array densities of at least 20,000 spots/cm.sup.2.

L19 ANSWER 10 OF 10 PASCAL COPYRIGHT 2004 INIST-CNRS. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 1997-0334856 PASCAL
COPYRIGHT NOTICE: Copyright .COPYRGT. 1997 INIST-CNRS. All rights reserved.
TITLE (IN ENGLISH): Fast temporal response fiber-optic chemical sensors based on the photodeposition of micrometer-scale polymer arrays
AUTHOR: HEALEY B. G.; WALT D. R.
CORPORATE SOURCE: The Max Tishler Laboratory for Organic Chemistry, Tufts University, Medford, Massachusetts 02155, United States
SOURCE: Analytical chemistry : (Washington, DC), (1997), 69(11), 2213-2216, 14 refs.
ISSN: 0003-2700 CODEN: ANCHAM
DOCUMENT TYPE: Journal
BIBLIOGRAPHIC LEVEL: Analytic
COUNTRY: United States
LANGUAGE: English
AVAILABILITY: INIST-120B, 354000061602880400
AN 1997-0334856 PASCAL
CP Copyright .COPYRGT. 1997 INIST-CNRS. All rights reserved.
AB Fiber-optic chemical sensor **microarrays** for the detection of pH and O.sub.2 have been developed with subsecond response times. Sensor **microarrays** are fabricated by the **covalent immobilization** (pH sensor arrays) or the physical entrapment (O.sub.2 sensor arrays) of fluorescent indicators in photodeposited polymer matrices on optical imaging fibers. Polymer **microarrays** are comprised of thousands of individual elements photodeposited as hemispheres such that each element of the sensor array is coupled directly to a discrete optical element of the imaging fiber and is not in contact with other neighboring elements. Because of the hemispherical shape and the individuality of the array elements, diffusion of analyte to the sensor elements is dominated by radial diffusion, resulting in a rapid response time. pH-sensitive arrays based on fluorescein respond to a 1.5-unit pH change within 300 ms, while the 02-sensitive arrays respond to O.sub.2 charges within 200 ms (90% of steady state response).

=> array and covalent and (coat or immobilization or immobilized)
L20 0 FILE AGRICOLA
L21 21 FILE BIOTECHNO
L22 1 FILE CONFSCI
L23 0 FILE HEALSAFE
L24 0 FILE IMSDRUGCONF
L25 8 FILE LIFESCI
L26 0 FILE MEDICONF
L27 22 FILE PASCAL

TOTAL FOR ALL FILES
L28 52 ARRAY AND COVALENT AND (COAT OR IMMOBILIZATION OR IMMOBILIZED)

=> (covalent(8A)(immobilized or immobilization or coating)) and l28
L29 0 FILE AGRICOLA

```
L30           4 FILE BIOTECHNO
L31           1 FILE CONFSCI
L32           0 FILE HEALSAFE
L33           0 FILE IMSDRUGCONF
L34           3 FILE LIFESCI
L35           0 FILE MEDICONF
L36          10 FILE PASCAL

TOTAL FOR ALL FILES
L37          18 (COVALENT(8A)(IMMOBILIZED OR IMMOBILIZATION OR COATING)) AND L28

=> dup rem
ENTER L# LIST OR (END):l37
DUPLICATE IS NOT AVAILABLE IN 'IMSDRUGCONF, MEDICONF'.
ANSWERS FROM THESE FILES WILL BE CONSIDERED UNIQUE
PROCESSING COMPLETED FOR L37
L38           16 DUP REM L37 (2 DUPLICATES REMOVED)

=> d l38 ibib abs total

L38   ANSWER 1 OF 16  PASCAL  COPYRIGHT 2004 INIST-CNRS. ALL RIGHTS RESERVED.
      on STN
ACCESSION NUMBER:         2004-0257090   PASCAL
COPYRIGHT NOTICE:         Copyright .COPYRGT. 2004 INIST-CNRS. All rights
                          reserved.
TITLE (IN ENGLISH):       Reversible catalyst supporting via
                          hydrogen-bonding-mediated self-assembly for Atom
                          transfer radical polymerization of MMA
AUTHOR:                   JUN YANG; SHIJIE DING; RADOSZ Maciej; YOUQING SHEN
CORPORATE SOURCE:         Department of Chemical & Petroleum Engineering,
                          University of Wyoming, Laramie, Wyoming 82071, United
                          States
SOURCE:                   Macromolecules, (2004), 37(5), 1728-1734
                          ISSN: 0024-9297  CODEN: MAMOBX
DOCUMENT TYPE:            Journal
BIBLIOGRAPHIC LEVEL:      Analytic
COUNTRY:                  United States
LANGUAGE:                 English
NOTE:                     1/4 p. ref. et notes
AVAILABILITY:             INIST-13789, 354000113490820120
AN    2004-0257090   PASCAL
CP    Copyright .COPYRGT. 2004 INIST-CNRS. All rights reserved.
AB    Atom transfer radical polymerization (ATRP) is a very useful
      living/controlled radical polymerization process for polymer synthesis,
      but its products are contaminated with transition metal catalyst residue.
      Catalyst immobilization on solids via covalent
      binding has the advantages of easy catalyst separation and reuse, but it
      deteriorates the control of the polymerization due to the slowed radical
      deactivation, which causes chain termination and uncontrolled
      propagation. In this paper, we report a reversible catalyst supporting
      concept via hydrogen-bonding-mediated self-assembly. The support acts as
      a "catalyst sponge" releasing the catalyst as free molecules at elevated
      temperatures for effective catalysis but absorbing the catalyst after the
      polymerization for separation. The support was polystyrene gel
      functionalized with maleimide or thymine units, and the catalyst was
      tethered on a diaminopyridine unit. A triple hydrogen bond array
      formed between maleimide or thymine and diaminopyridine at room
      temperature but broke at elevated temperatures. At 60 °C, the
      reversibly supported catalyst efficiently polymerized MMA in a
      well-controlled living manner, yielding PMMA with polydispersity as low
      as those by unsupported catalysts. The recycled catalysts still mediated
      MMA polymerization with a much improved control.

L38   ANSWER 2 OF 16  PASCAL  COPYRIGHT 2004 INIST-CNRS. ALL RIGHTS RESERVED.
```

on STN
ACCESSION NUMBER: 2004-0087191 PASCAL
TITLE (IN ENGLISH): The **immobilization** of DNA on microstructured patterns fabricated by maskless lithography
AUTHOR: ZHANG G. J.; TANII T.; ZAKO T.; FUNATSU T.; OHDOMARI I.
CORPORATE SOURCE: Nanotechnology Research Center Waseda University, Shinjuku-ku, Tokyo 162-0041, Japan
SOURCE: Sensors and Actuators, B: Chemical, (2004), 97(2-3), 243-248, 19 refs.
ISSN: 0925-4005 CODEN: SABCEB
DOCUMENT TYPE: Journal
BIBLIOGRAPHIC LEVEL: Analytic
COUNTRY: Switzerland
LANGUAGE: English
AVAILABILITY: INIST-19425 B
AN 2004-0087191 PASCAL
AB The site-directed **covalent immobilization** of amino-terminated DNA oligonucleotides on microstructured patterns at silicon surfaces generated by the methodology of electron beam (EB) lithography was investigated. The microstructured patterns characterized by scanning electron microscopy (SEM) revealed remarkably regular in size and shape. After treatment with different time of activation (10s and 30min), self-assembled layers of 3-aminopropyltriethoxysilane (APTES) on silicon surfaces characterized by X-ray photoelectron spectroscopy (XPS) were demonstrated to obtain similar N 1s peaks. The **immobilization** specificity was evaluated by means of 5$PRM amino-modified oligonucleotides labeled with Cy 5 at its 3$PRM end attached onto microstructured patterns. The high-density DNA **array** (40,000 spots per cm2) was achieved, and the resulting **array** exhibited the specific binding due to DNA-DNA interaction. Additional studies indicated hardly visible signals when non-complementary probes were **immobilized** on the microstructured patterns. The deposition of DNA in a microstructure **array** using this technique is precise and homogeneous, showing the potential for high-density information storage and the miniaturization for biosensors and biochips. .COPYRGT. 2003 Elsevier B.V. All rights reserved.

L38 ANSWER 3 OF 16 PASCAL COPYRIGHT 2004 INIST-CNRS. ALL RIGHTS RESERVED. on STN
ACCESSION NUMBER: 2003-0266682 PASCAL
TITLE (IN ENGLISH): A novel self-assembled nanoparticulate film for **covalent** attachment of antibodies to plastic
AUTHOR: CUNNINGHAM E.; CAMPBELL C. J.
CORPORATE SOURCE: Scottish Ctr. Genomic Technol. Info. Univ. of Edinburgh College of Medicine, Edinburgh, EH16 4SB, United Kingdom
SOURCE: Langmuir, (2003), 19(10), 4509-4511, 12 refs.
ISSN: 0743-7463 CODEN: LANGD5
DOCUMENT TYPE: Journal
BIBLIOGRAPHIC LEVEL: Analytic
COUNTRY: United States
LANGUAGE: English
AVAILABILITY: INIST-20642
AN 2003-0266682 PASCAL
AB Nanostructured silica-layer films were used as solid-phase support for **covalent immobilization** of capture antibody. This silica film showed higher protein loading per cm2 over conventional two-dimensional surfaces. A sensitive quantitative immunoassay was demonstrated on this silica surface with an optical readout.

L38 ANSWER 4 OF 16 PASCAL COPYRIGHT 2004 INIST-CNRS. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 2003-0406556 PASCAL
COPYRIGHT NOTICE: Copyright .COPYRGT. 2003 INIST-CNRS. All rights reserved.
TITLE (IN ENGLISH): Optimization of sol-gel formulations and surface treatments for the development of pin-printed protein microarrays
AUTHOR: RUPCICH Nicholas; GOLDSTEIN Aaron; BRENNAN John D.
CORPORATE SOURCE: Department of Chemistry, McMaster University, Hamilton, Ontario, L8S 4M1, Canada
SOURCE: Chemistry of materials, (2003), 15(9), 1803-1811, 38 refs.
ISSN: 0897-4756
DOCUMENT TYPE: Journal
BIBLIOGRAPHIC LEVEL: Analytic
COUNTRY: United States
LANGUAGE: English
AVAILABILITY: INIST-21957, 354000118103980060
AN 2003-0406556 PASCAL
CP Copyright .COPYRGT. 2003 INIST-CNRS. All rights reserved.
AB We report on the development and optimization of a sol-gel-based method for the preparation of protein microarrays that has the potential to allow pin-spotting of active proteins for high throughput multianalyte biosensing and screening of protein-small molecule interactions. Microarrays were printed onto bare and chemically modified surfaces using the commercially available sol-gel precursors tetraethyl orthosilicate and sodium silicate and the newly developed biocompatible sol-gel precursors monosorbitol silane and diglyceryl silane. Parameters such as the type and level of the buffer, the water-to-silane ratio, and the solution pH were also varied to assess the factors that controlled the production of optimal microarrays. Such factors included the ability to pin-print without clogging of the pins, the adhesion of the sol-gel spot to the substrate, the dimensions of the microspot, and the stability of both the microspot and the entrapped protein. The microarraying of active antibodies was successfully demonstrated using an optimized combination of parameters, and such **arrays** were shown to have significantly higher signal-to-background levels than conventional **arrays** formed by **covalent immobilization** of antibodies on chemically derivatized surfaces.

L38 ANSWER 5 OF 16 LIFESCI COPYRIGHT 2004 CSA on STN
ACCESSION NUMBER: 2003:101740 LIFESCI
TITLE: Impact of surface chemistry and blocking strategies on DNA microarrays
AUTHOR: Taylor, S.; Smith, S.; Windle, B.; Guiseppi-Elie, A.
CORPORATE SOURCE: Center for Bioelectronics, Biosensors and Biochips, Department of Medicinal Chemistry and Department of Chemical Engineering, Virginia Commonwealth University, PO Box 843038, 601 West Main Street, Richmond, VA 23284-3038, USA; E-mail: guiseppi@vcu.edu
SOURCE: Nucleic Acids Research [Nucleic Acids Res.], (20030000) vol. 31, no. 16, e87.
ISSN: 0305-1048.
DOCUMENT TYPE: Journal
FILE SEGMENT: N
LANGUAGE: English
SUMMARY LANGUAGE: English
AB The surfaces and **immobilization** chemistries of DNA microarrays are the foundation for high quality gene expression data. Four surface modification chemistries, poly-L-lysine (PLL), 3-glycidoxypropyltrimethoxysilane (GPS), DAB- AM-poly(propyleminime hexadecaamine) dendrimer (DAB) and 3- aminopropyltrimethoxysilane (APS), were evaluated using cDNA and oligonucleotide sub-**arrays**. Two un-silanized glass surfaces, RCA-cleaned and immersed in Tris- EDTA buffer were also studied. DNA on amine-modified surfaces was fixed by UV (90

mJ/cm super(2)), while DNA on GPS-modified surfaces was **immobilized** by **covalent** coupling. **Arrays** were blocked with either succinic anhydride (SA), bovine serum albumin (BSA) or left unblocked prior to hybridization with labeled PCR product. Quality factors evaluated were surface affinity for cDNA versus oligonucleotides, spot and background intensity, spotting concentration and blocking chemistry. Contact angle measurements and atomic force microscopy were preformed to characterize surface wettability and morphology. The GPS surface exhibited the lowest background intensity regardless of blocking method. Blocking the **arrays** did not affect raw spot intensity, but affected background intensity on amine surfaces, BSA blocking being the lowest. Oligonucleotides and cDNA on unblocked GPS-modified slides gave the best signal (spot-to-background intensity ratio). Under the conditions evaluated, the unblocked GPS surface along with amine **covalent** coupling was the most appropriate for both cDNA and oligonucleotide microarrays.

L38 ANSWER 6 OF 16 PASCAL
on STN

ACCESSION NUMBER: 2002-0575581 PASCAL
TITLE (IN ENGLISH): Surface characterization of a silicon-chip-based DNA microarray
AUTHOR: LENIGK R.; CARLES M.; IP N. Y.; SUCHER N. J.
CORPORATE SOURCE: Biotechnology Research Institute Department of Biology Hong Kong Univ. of Sci. and Technol., Kowloon, SAR, Hong Kong
SOURCE: Langmuir, (2001), 17(8), 2497-2501, 27 refs.
ISSN: 0743-7463
DOCUMENT TYPE: Journal
BIBLIOGRAPHIC LEVEL: Analytic
COUNTRY: United States
LANGUAGE: English
AVAILABILITY: INIST-20642
AN 2002-0575581 PASCAL
AB The **immobilization** of DNA (deoxyribonucleic acid) on solid supports is a crucial step for any application in the field of DNA microarrays. It determines the efficacy of the hybridization and influences the signal strength for the detection. We used solid supports made from silicon wafers as an alternative substrate to the commonly used microscope glass slides. The **covalent immobilization** of thiol-terminated DNA oligonucleotides on self-assembled layers of(3-mercaptopropyl)trimethoxysilane (MPTS) by disulfide bond formation was investigated. Contact angle measurement, variable angle spectral ellipsometry (VASE), X-ray photoelectron spectroscopy (XPS), and atomic force microscopy (AFM) were used to characterize the changing properties of the surface during the DNA **array** fabrication. During wafer processing the contact angle changed from 3° for the hydroxylated surface to 48.5° after deposition of MPTS. XPS data demonstrated that all sulfur in the MPTS layer was present in the form of reduced SH or S-S groups. VASE measurements indicated a layer thickness of 57.8 A for the **immobilized** 16 base oligonucleotides including a 18 carbon atom spacer located between the disulfide bond and the oligomer. AFM was used to characterize the DNA layer before and after hybridization to a complementary target. The data recorded after hybridization revealed a sharp increase in particle size from 89 nm2 to a mean value of 363 nm2. Fluorescence microscopy was used to monitor the hybridization of a fluorescently labeled DNA target to the **immobilized** probe. The heat stable disulfide-linkage formed during the oligonucleotide **immobilization** allowed the stripping of complementary DNA targets as well as rehybridization. These data show the advantages and applicability of silicon wafers that have been processed with CMOS (complementary metal oxide semiconductor) compatible processes as solid support in DNA technology. This approach offers the possibility of integration with other silicon-based components such as PCR microreactors

and capillary electrophoresis units into a "lab-on-a-chip".

L38 ANSWER 7 OF 16 PASCAL COPYRIGHT 2004 INIST-CNRS. ALL RIGHTS RESERVED. on STN
ACCESSION NUMBER: 2002-0029558 PASCAL
TITLE (IN ENGLISH): Fabrication of polymer thin films and **arrays** with spatial and topographical controls
AUTHOR: BARTLETT M. A.; YAN M.
CORPORATE SOURCE: Department of Chemistry Portland State University, Portland, OR 97271, United States
SOURCE: Advanced Materials, (2001), 13(19), 1449-1451, 23 refs.
ISSN: 0935-9648 CODEN: ADVMEW
DOCUMENT TYPE: Journal
BIBLIOGRAPHIC LEVEL: Analytic
COUNTRY: Germany, Federal Republic of
LANGUAGE: English
AVAILABILITY: INIST-22427
AN 2002-0029558 PASCAL
AB A versatile technique for the **covalent immobilization** of polymer thin films on silicon substrates using functionalized perfluorophenyl azides (PFPA) was developed. The photochemical **immobilization** of poly(2-ethyl-2-oxazoline) PEOX and polystyrene thin films was also reported. The ability of the method to create spatially defined polymer hybrid **arrays** of differing heights resulting in unique surface topographies was demonstrated.

L38 ANSWER 8 OF 16 BIOTECHNO COPYRIGHT 2004 Elsevier Science B.V. on STN DUPLICATE
ACCESSION NUMBER: 2001:33043016 BIOTECHNO
TITLE: Enzyme microgels in packed-bed bioreactors with downstream amperometric detection using microfabricated interdigitated microsensor electrode **arrays**
AUTHOR: Guiseppi-Elie A.; Sheppard N.F. Jr.; Brahim S.; Narinesingh D.
CORPORATE SOURCE: A. Guiseppi-Elie, Department of Chemical Engineering, Center for Bioelectronics, Virginia Commonwealth University, P.O. Box 843028, Richmond, VA 23284-3028, United States.
E-mail: guiseppi@vcu.edu
SOURCE: Biotechnology and Bioengineering, (20 NOV 2001), 75/4 (475-484), 29 reference(s)
CODEN: BIBIAU ISSN: 0006-3592
DOCUMENT TYPE: Journal; Article
COUNTRY: United States
LANGUAGE: English
SUMMARY LANGUAGE: English
AN 2001:33043016 BIOTECHNO
AB In this article, we describe the use of pH-responsive hydrogels as matrices for the **immobilization** of two enzymes, glucose oxidase (GOx) and glutamate oxidase (GlutOx). Spherical hydrogel beads were prepared by inverse suspension polymerization and the enzymes were **immobilized** by either physical entrapment or **covalent immobilization** within or on the hydrogel surface. Packed-bed bioreactors were prepared containing the bioactive hydrogels and these incorporated into flow injection (FI) systems for the quantitation of glucose and monosodium glutamate (MSG) respectively. The FI amperometric detector comprised a microfabricated interdigitated **array** within a thin-layer flow cell. For the FI manifold incorporating **immobilized** GOx, glucose response curves were found to be linear over the concentration range 1.8-280 mg dL.sup.-.sup.1 (0.1-15.5 mM) with a detection limit of 1.4 mg dL.sup.-.sup.1(0.08 mM). Up to 20 samples can be manually analyzed per hour, with the hydrogel-GOx bioreactor

exhibiting good within-day (0.19%) precision. The optimized FI manifold for MSG quantitation yielded a linear response range of up to 135 mg dL.sup.-.sup.1 (8 mM) with a detection limit of 3.38 mg dL.sup.-.sup.1 (0.2 mM) and a throughput of 30 samples h.sup.-.sup.1. Analysis of commercially produced soup samples gave a within-day precision of 3.6%. Bioreactors containing these two physically entrapped enzymes retained > 60% of their initial activities after a storage period of up to 1 year. .COPYRGT. 2001 John Wiley & Sons, Inc.

L38 ANSWER 9 OF 16 PASCAL COPYRIGHT 2004 INIST-CNRS. ALL RIGHTS RESERVED. on STN

ACCESSION NUMBER: 2002-0196328 PASCAL
COPYRIGHT NOTICE: Copyright .COPYRGT. 2002 INIST-CNRS. All rights reserved.
TITLE (IN ENGLISH): **Covalent** strategy for **immobilization** of DNA-microspots suitable for microarrays with label-free and time-resolved optical detection of hybridization
Miniaturization and chip technology in analytical chemistry
AUTHOR: JUNG A.; STEMMLER I.; BRECHT A.; GAUGLITZ G.
KITAMORI Takehito (ed.)
CORPORATE SOURCE: Institute of Physical and Theoretical Chemistry, University of Tuebingen, Auf der Morgenstelle 8, 72076 Tuebingen, Germany, Federal Republic of; Cytion SA Biopole, Ch. des Croisettes 22, 1066 Epalinges, Switzerland
Department of Applied Chemistry, School of Engineering, The University of Tokyo, 7-3-1 Hongo, Kunkyo-ku, Tokyo 113-8658, Japan
SOURCE: Fresenius' journal of analytical chemistry, (2001), 371(2), 128-136, 36 refs.
ISSN: 0937-0633
DOCUMENT TYPE: Journal
BIBLIOGRAPHIC LEVEL: Analytic
COUNTRY: Germany, Federal Republic of
LANGUAGE: English
AVAILABILITY: INIST-853, 354000096406090060
AN 2002-0196328 PASCAL
CP Copyright .COPYRGT. 2002 INIST-CNRS. All rights reserved.
AB Sequence-specific detection and quantification of nucleic acids are central steps in many molecular biology procedures which have also been transferred to chip-based procedures. Hybridization-based assays can be used to quantify and discriminate between DNA target sequences down to the level of single base mismatches. **Arrays** of DNA probes **immobilized** on a support enable simultaneous testing of multiple sequences of a single sample. DNA **arrays** can be produced either by in-situ synthesis of oligonucleotides or by **immobilization** of pre-assembled DNA probes. **Covalent** and directed **immobilization** improves the reproducibility and stability of DNA **arrays**. This is especially interesting with repeated use of transducers or chips. Procedures are described for effective **covalent immobilization** of pre-assembled amino-linked oligonucleotides, by use of ink-jet techniques, on a modified and heated glass surface, with addressable surface areas ranging from 0.01 mm.sup.2 to a few mm.sup.2. Almost immediate evaporation of the spotted droplets on the heated surfaces leads to very high surface hybridization capacities. The surfaces are suitable for use with a label-free detection method - reflectometric interference spectroscopy (RIfS). It is shown that hybridization capacity and non-specific interaction at these DNA-surfaces can be characterized by use of RIfS. With a consumption of less than 80 ng.mm.sup.-.sup.2 oligonucleotide and a specific hybridization capacity of more than 300 fmol mm.sup.-.sup.2, the activated aminodextran procedure was usually suitable for setting up a

DNA **array** with label-free detection. Non-specific interactions with random oligomers or protein (ovalbumin) were low. Up to 150 repeated regenerations (stripping) of the surfaces by acid treatment and denaturing agents, and 50 days of storage, have been possible without significant loss of hybridization capacity.

L38 ANSWER 10 OF 16 BIOTECHNO COPYRIGHT 2004 Elsevier Science B.V. on STN
ACCESSION NUMBER: 2000:30219908 BIOTECHNO
TITLE: Integration of layered redox proteins and conductive supports for bioelectronic applications
AUTHOR: Willner I.; Katz E.
CORPORATE SOURCE: Prof. I. Willner, Institute of Chemistry, Hebrew University of Jerusalem, Jerusalem 91904, Israel. E-mail: willnea@vms.huji.ac.il
SOURCE: Angewandte Chemie - International Edition, (03 APR 2000), 39/7 (1180-1218)
CODEN: ACIEAY ISSN: 1433-7851
DOCUMENT TYPE: Journal; General Review
COUNTRY: Germany, Federal Republic of
LANGUAGE: English
SUMMARY LANGUAGE: English
AN 2000:30219908 BIOTECHNO
AB Integration of redox enzymes with an electrode support and formation of an electrical contact between the biocatalysts and the electrode is the fundamental subject of bioelectronics and optobioelectronics. This review addresses the recent advances and the scientific progress in electrically contacted, layered enzyme electrodes, and discusses the future applications of the systems in various bioelectronic devices, for example, amperometric biosensors, sensoric **arrays**, logic gates, and optical memories. This review presents the methods for the **immobilization** of redox enzymes on electrodes and discusses the **covalent** linkage of proteins, the use of supramolecular affinity complexes, and the reconstitution of apo-redox enzymes for the nanoengineering of electrodes with protein monolayers of electrodes with protein monolayers and multilayers. Electrical contact in the layered enzyme electrode is achieved by the application of diffusional electron mediators, such as ferrocene derivatives, ferricyanide, quinones, and bipyridinium salts. **Covalent** tethering of electron relay units to layered enzyme electrodes, the cross-linking of affinity complexes formed between redox proteins and electrodes functionalized with relay-cofactor units, or surface reconstitution of apo-enzymes on relay-cofactor-functionalized electrodes yield bioelectrocatalytic electrodes. The application of the functionalized electrodes as biosensor devices is addressed and further application of electrically 'wired' enzymes as catalytic interfaces in biofuel cells is discussed. The organization of sensor **arrays**, self-calibrated biosensors, or gated bioelectronic devices requires the microstructuring of biomaterials on solid supports in the form of ordered micro-patterns. For example, light- sensitive layers composed of azides, benzophenone, or diazine derivatives associated with solid supports can be irradiated through masks to enable the patterned **covalent** linkage of biomaterials to surfaces. Alternatively, patterning of biomaterials can be accomplished by noncovalent interactions (such as in affinity complexes between avidin and a photolabeled biotin, or between an antibody and a photoisomerizable antigen layer) to provide a means of organizing protein microstructures on surfaces. The organization of patterned hydrophilic/hydrophobic domains on surfaces, by using photolithography, stamping, or micromachining methods, allows the selective patterning of surfaces by hydrophobic, noncovalent interactions. Photoactivated layered enzyme electrodes act as light-switchable optobioelectronic systems for the amperometric transduction of recorded photonic information. These systems can act as optical memories, biomolecular amplifiers, or logic gates. The photoswitchable enzyme electrodes are generated by the tethering of photoisomerizable groups to the protein, the reconstitution

of apo-enzymes with semisynthetic photoisomerizable cofactor units, or the coupling of photoisomerizable electron relay units.

L38 ANSWER 11 OF 16 LIFESCI COPYRIGHT 2004 CSA on STN
ACCESSION NUMBER: 2000:90493 LIFESCI
TITLE: Preparation of DNA and protein micro **arrays** on glass slides coated with an agarose film
AUTHOR: Afanassiev, V.; Hanemann, V.; Woelfl, S.
CORPORATE SOURCE: Hans-Knoell-Institut fuer Naturstoff-Forschung, Beutenbergstrasse 11, D-07745 Jena, Germany; E-mail: stefan@imb-jena.de
SOURCE: Nucleic Acids Research [Nucleic Acids Res.], (20000615) vol. 28, no. 12, pp. E66-E66.
ISSN: 0305-1048.
DOCUMENT TYPE: Journal
FILE SEGMENT: N
LANGUAGE: English
SUMMARY LANGUAGE: English
AB A thin layered agarose film on microscope slides provides a versatile support for the preparation of arrayed molecular libraries. An activation step leading to the formation of aldehyde groups in the agarose creates reactive sites that allow **covalent immobilization** of molecules containing amino groups. **Arrays** of oligonucleotides and PCR products were prepared by tip printing. After hybridization with complementary fluorescence labeled nucleic acid probes strong fluorescence signals of sequence-specific binding to the **immobilized** probes were detected. The intensity of the fluorescence signals was proportional to the relative amount of **immobilized** oligonucleotides and to the concentration of the fluorescence labeled probe. We also used the agarose film-coated slides for the preparation of protein **arrays** . In combination with specific fluorescence labeled antibodies these protein **arrays** can be used for fluorescence linked immune assays. With this approach different protein tests can be performed in parallel in a single reaction with minimal amounts of the binding reagents.

L38 ANSWER 12 OF 16 PASCAL COPYRIGHT 2004 INIST-CNRS. ALL RIGHTS RESERVED. on STN
ACCESSION NUMBER: 1999-0360277 PASCAL
COPYRIGHT NOTICE: Copyright .COPYRGT. 1999 INIST-CNRS. All rights reserved.
TITLE (IN ENGLISH): Design of oligonucleotide **arrays** at interfaces
AUTHOR: BONCHEVA M.; SCHEIBLER L.; LINCOLN P.; VOGEL H.; AKERMAN B.
CORPORATE SOURCE: Department of Physical Chemistry, Chalmers University of Technology, 412 96 Goeteborg, Sweden; Institut de Chimie Organique, Universite de Lausanne, 1015 Lausanne, Switzerland; Laboratoire de Chimie Physique des Polymeres et Membranes, Ecole Polytechnique Federale de Lausanne, 1015 Lausanne, Switzerland
SOURCE: Langmuir, (1999), 15(13), 4317-4320, 15 refs.
ISSN: 0743-7463 CODEN: LANGD5
DOCUMENT TYPE: Journal
BIBLIOGRAPHIC LEVEL: Analytic
COUNTRY: United States
LANGUAGE: English
AVAILABILITY: INIST-20642, 354000085516580030
AN 1999-0360277 PASCAL
CP Copyright .COPYRGT. 1999 INIST-CNRS. All rights reserved.
AB The surface attachment and detection of DNA probes are essential in the design of nucleic acid-based biosensors. A new strategy for the **covalent immobilization** of single-stranded oligonucleotides on gold-covered planar supports is presented.

Optimization of the surface density in the resulting DNA **arrays** permits a high hybridization efficiency to be achieved. Surface plasmon resonance and, for the first time, ATR-FTIR spectroscopy are used to follow in situ the oligonucleotide layer formation and the subsequent complementary strand hybridization. Such well-defined, covalently **immobilized** oligonucleotide **arrays** can find application in the development of novel DNA-based sensors for mutation detection and gene mapping as well as in studies of nucleic acid-ligand interactions.

L38 ANSWER 13 OF 16 BIOTECHNO COPYRIGHT 2004 Elsevier Science B.V. on STN
ACCESSION NUMBER: 1999:29221649 BIOTECHNO
TITLE: A novel microtiter plate based method for identification of B-cell epitopes
AUTHOR: Gregorius K.; Dalum I.; Freisleben M.; Mouritsen S.; Elsner H.I.
CORPORATE SOURCE: K. Gregorius, M and E Biotech A-S, 6 Kogle Alle, DK-2970 Horsholm, Denmark.
SOURCE: Journal of Peptide Science, (1999), 5/2 (75-82), 21 reference(s)
CODEN: JPSIEI ISSN: 1075-2617
DOCUMENT TYPE: Journal; Article
COUNTRY: United Kingdom
LANGUAGE: English
SUMMARY LANGUAGE: English
AN 1999:29221649 BIOTECHNO
AB A new type of microtiter plate capable of binding biomolecules covalently in a one step procedure was used to map linear B-cell epitopes in two different proteins using a peptide-based solid phase immunoassay. The method was compared with a conventional **immobilization** method using passive adsorption to microtiter plates. An **array** of 15-mer peptides, overlapping by five amino acids, representing the entire sequences of ubiquitin and murine tumor necrosis factor-α, respectively, was synthesized. The peptides were **immobilized** covalently using the new, specialized microtiter plates or non-covalently using conventional ELISA microtiter plates of the high binder type. Subsequently, specific antisera to ubiquitin or murine tumor necrosis factor-α were added to identify potential linear B-cell epitopes. All peptides, which were recognized on the conventional microtiter plates, were also recognized on the plates with the covalently bound peptides. In addition, the **covalent immobilization** method revealed epitopes that were not identified using the method for non-**covalent** binding although the peptides were in fact present on the non-**covalent** binding surface. The interaction with the hydrophobic surface of the conventional microtiter plate apparently interfered negatively with antibody recognition. The covalently binding microtiter plates described here could be useful for identification of new B-cell epitopes in protein antigens.

L38 ANSWER 14 OF 16 BIOTECHNO COPYRIGHT 2004 Elsevier Science B.V. on STN
ACCESSION NUMBER: 1999:29024605 BIOTECHNO
TITLE: **Immobilization** of oligonucleotides onto a glass support via disulfide bonds: A method for preparation of DNA microarrays
AUTHOR: Rogers Y.-H.; Jiang-Baucom P.; Huang Z.-J.; Bogdanov V.; Anderson S.; Boyce- Jacino M.T.
CORPORATE SOURCE: M.T. Boyce-Jacino, Orchid Biocomputer, Inc., Alpha Center, Johns Hopkins Bayview Res. Campus, 5210 Eastern Avenue, Baltimore, MD 21224, United States. E-mail: mbj@orchidbio.com
SOURCE: Analytical Biochemistry, (01 JAN 1999), 266/1 (23-30), 42 reference(s)
CODEN: ANBCA2 ISSN: 0003-2697
DOCUMENT TYPE: Journal; Article
COUNTRY: United States

LANGUAGE: English
SUMMARY LANGUAGE: English
AN 1999:29024605 BIOTECHNO
AB The **covalent** attachment of disulfide-modified oligonucleotides to a mercaptosilane-modified glass surface is described. This method provides an efficient and specific **covalent** attachment chemistry for **immobilization** of DNA probes onto a solid support. Glass slides were derivatized with 3- mercaptopropyl silane for attachment of 5-prime disulfide-modified oligonucleotides via disulfide bonds. An attachment density of approximately 3 x 10.sup.5 oligonucleotides/μm.sup.2 was observed. Oligonucleotides attached by this method provided a highly efficient substrate for nucleic acid hybridization and primer extension assays. In addition, we have demonstrated patterning of multiple DNA probes on a glass surface utilizing this attachment chemistry, which allows for **array** densities of at least 20,000 spots/cm.sup.2.

L38 ANSWER 15 OF 16 PASCAL COPYRIGHT 2004 INIST-CNRS. ALL RIGHTS RESERVED. on STN
ACCESSION NUMBER: 1997-0334856 PASCAL
COPYRIGHT NOTICE: Copyright .COPYRGT. 1997 INIST-CNRS. All rights reserved.
TITLE (IN ENGLISH): Fast temporal response fiber-optic chemical sensors based on the photodeposition of micrometer-scale polymer **arrays**
AUTHOR: HEALEY B. G.; WALT D. R.
CORPORATE SOURCE: The Max Tishler Laboratory for Organic Chemistry, Tufts University, Medford, Massachusetts 02155, United States
SOURCE: Analytical chemistry : (Washington, DC), (1997), 69(11), 2213-2216, 14 refs.
ISSN: 0003-2700 CODEN: ANCHAM
DOCUMENT TYPE: Journal
BIBLIOGRAPHIC LEVEL: Analytic
COUNTRY: United States
LANGUAGE: English
AVAILABILITY: INIST-120B, 354000061602880400
AN 1997-0334856 PASCAL
CP Copyright .COPYRGT. 1997 INIST-CNRS. All rights reserved.
AB Fiber-optic chemical sensor microarrays for the detection of pH and O.sub.2 have been developed with subsecond response times. Sensor microarrays are fabricated by the **covalent** **immobilization** (pH sensor **arrays**) or the physical entrapment (O.sub.2 sensor **arrays**) of fluorescent indicators in photodeposited polymer matrices on optical imaging fibers. Polymer microarrays are comprised of thousands of individual elements photodeposited as hemispheres such that each element of the sensor **array** is coupled directly to a discrete optical element of the imaging fiber and is not in contact with other neighboring elements. Because of the hemispherical shape and the individuality of the **array** elements, diffusion of analyte to the sensor elements is dominated by radial diffusion, resulting in a rapid response time. pH-sensitive **arrays** based on fluorescein respond to a 1.5-unit pH change within 300 ms, while the 02-sensitive **arrays** respond to O.sub.2 charges within 200 ms (90% of steady state response).

L38 ANSWER 16 OF 16 CONFSCI COPYRIGHT 2004 CSA on STN
ACCESSION NUMBER: 1998:58409 CONFSCI
DOCUMENT NUMBER: 98-058409
TITLE: Non-manual sequential functionalization of individual electrodes of an **array** for **covalent** **immobilization** of different biological recognition elements
AUTHOR: Kurzawa, C.; Habermueller, K.; Strohmeier, J.; Schuhmann,

W.
CORPORATE SOURCE: Ruhr Universitaet Bochum, Germany
SOURCE: Biosensors & Bioelectronics, Institute of BioScience & Technology, Cranfield University, Cranfield, Beds MK43 0AL, United Kingdom; fax: +44 1234 752 401; URL: http://www.elsevier.nl:80/homepage/sah/bios98, Abstracts and full papers available..
Meeting Info.: 982 5025: 5th World Congress on Biosensors (9825025). Berlin (Germany). 3-5 Jun 1998. Institute of BioScience & Technology.
DOCUMENT TYPE: Conference
FILE SEGMENT: DCCP
LANGUAGE: English

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COST IN U.S. DOLLARS

	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	46.60	46.81

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FULL ESTIMATED COST	0.30	47.11

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=> (covalent(8A)(immobilized or immobilization or coating)) and array
L39 65 FILE CAPLUS
L40 9 FILE BIOSIS
L41 13 FILE MEDLINE
L42 4 FILE EMBASE
L43 3531 FILE USPATFULL

TOTAL FOR ALL FILES
L44 3622 (COVALENT(8A)(IMMOBILIZED OR IMMOBILIZATION OR COATING)) AND ARRAY

=> dup rem
ENTER L# LIST OR (END):l39-142
PROCESSING COMPLETED FOR L39
PROCESSING COMPLETED FOR L40

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PROCESSING COMPLETED FOR L41
PROCESSING COMPLETED FOR L42
L45          71 DUP REM L39-L42 (20 DUPLICATES REMOVED)

=> l45 and py<2001
L46          64 S L45
L47          20 FILE CAPLUS
L48           3 S L45
L49           1 FILE BIOSIS
L50           4 S L45
L51           0 FILE MEDLINE
L52           0 S L45
L53           0 FILE EMBASE
L54           0 S L45
L55           0 FILE USPATFULL

TOTAL FOR ALL FILES
L56          21 L45 AND PY<2001

=> d l56 ibib abs total

L56  ANSWER 1 OF 21  CAPLUS  COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER:         2002:276458  CAPLUS
DOCUMENT NUMBER:          136:274240
TITLE:                    Methods and apparatus for nucleic acid analysis
INVENTOR(S):              Drmanac, Radoje
PATENT ASSIGNEE(S):       USA
SOURCE:                   U.S. Pat. Appl. Publ., 37 pp., Cont.-in-part of U.S.
                          6,297,006.
                          CODEN: USXXCO
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   7
PATENT INFORMATION:

     PATENT NO.           KIND   DATE        APPLICATION NO.          DATE
     ---------------      ----   --------    --------------------     --------
     US 2002042048         A1    20020411    US 1997-892503           19970714
     US 6309824            B1    20011030    US 1997-784747           19970116
     US 6297006            B1    20011002    US 1997-812951           19970304
     US 6383742            B1    20020507    US 1997-912885           19970815
     US 2002034737         A1    20020321    US 1997-947779           19971009
     WO 9831836            A1    19980723    WO 1998-US704            19980114 <--
         W:  AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE,
             DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG,
             KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX,
             NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT,
             UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI,
             FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM,
             GA, GN, ML, MR, NE, SN, TD, TG
     AU 9861317            A1    19980807    AU 1998-61317            19980114 <--
     AU 745201             B2    20020314
     EP 968305             A1    20000105    EP 1998-905956           19980114 <--
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, FI
     JP 2001509027         T2    20010710    JP 1998-534497           19980114
     BR 9806914            A     20010918    BR 1998-6914             19980114
     NZ 513913             A     20010928    NZ 1998-513913           19980114
     US 2003108897         A1    20030612    US 2002-187251           20020701
PRIORITY APPLN. INFO.:                       US 1997-784747      A2   19970116
                                             US 1997-812951      A2   19970304
                                             US 1997-892503      A2   19970714
                                             US 1997-912885      A2   19970815
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US 1997-947779 B1 19971009
WO 1998-US704 W 19980114

AB The present invention provides a method for detecting a target nucleic acid species including the steps of providing an **array** of probes affixed to a substrate and a plurality of labeled probes. Each labeled probe is selected to have a first nucleic acid sequence which is complementary to a first portion of a target nucleic acid and wherein the nucleic acid sequence of at least one probe affixed to the substrate is complementary to a second portion of the nucleic acid sequence of the target. The invention relates to applying a target nucleic acid to the **array** under suitable conditions for hybridization of probe sequences to complementary sequences. The method further involves introduction of labeled probe to the **array**, hybridizing a probe affixed to the substrate to the target nucleic acid, hybridizing the labeled probe to the target nucleic acid, affixing the labeled probe to an adjacently hybridized probe in the **array** and detecting the labeled probe affixed to the probe in the **array**. The invention further relates to **covalent** joining of the **immobilized** probes to labeled probes that are immediately adjacent to the immobilized probe on the target sequence; removing any non-ligated labeled probes; detecting the presence of the target nucleic acid by detecting the presence of said labeled probe attached to the immobilized probes.

L56 ANSWER 2 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:900852 CAPLUS
DOCUMENT NUMBER: 134:53462
TITLE: Microarrays of immobilized oligonucleotide probes and computer-based systems for gene expression analysis
INVENTOR(S): Baidya, Narayan; Chen, Yii-Der Ida; Holding, Julie; Yu, Yie-Teh
PATENT ASSIGNEE(S): Clingenix, Inc., USA
SOURCE: PCT Int. Appl., 58 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000077257	A1	20001221	WO 2000-US15850	20000609 <--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 1185701	A1	20020313	EP 2000-939721	20000609
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 6716579	B1	20040406	US 2000-591366	20000609

PRIORITY APPLN. INFO.: US 1999-138690P P 19990611
WO 2000-US15850 W 20000609

AB The present invention provides microarrays comprising a plurality of polynucleotide probes having sequences complementary to the 3' untranslated region of a gene transcript, whose chromosomal location has been defined. The probes are **immobilized** via **covalent** linkage on a solid support, such as nitrocellulose, nylon, polypropylene, glass, and silicon. Probes comprising sequence tagged site (STS) tags may be used. Polynucleotides conjugated with a enzyme, radioactive, or luminescent label may be contained in the **array**. The

microarrays are particularly useful for conducting comparative gene expression analyses, eg., differential expression of multiple genes. The present invention also includes a method of preparing these microarrays and various methods of using these microarrays for detecting differential expression for multiple gene transcripts amongst multiple subjects. Further provided by the invention are computer readable media recorded thereon an **array** of polynucleotide probes as specified herein, a computer-based system, and kits for detecting differential expression of a multiplicity of gene transcripts. Floppy disks, hard disk, magnetic tape, CD-ROM, random access memory (RAM), or read only memory (ROM).
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 3 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:682505 CAPLUS
DOCUMENT NUMBER: 134:53237
TITLE: Covalent attachment of oligodeoxyribonucleotides to amine-modified Si (001) surfaces
AUTHOR(S): Strother, Todd; Hamers, Robert J.; Smith, Lloyd M.
CORPORATE SOURCE: Department of Chemistry, University of Wisconsin, Madison, WI, 53706-1396, USA
SOURCE: Nucleic Acids Research (**2000**), 28(18), 3535-3541
CODEN: NARHAD; ISSN: 0305-1048
PUBLISHER: Oxford University Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A recently described reaction for the UV-mediated attachment of alkenes to silicon surfaces is utilized as the basis for the preparation of functionalized silicon surfaces. UV light mediates the reaction of t-butyloxycarbonyl (t-BOC) protected ω-unsatd. amino-alkane (10-aminodec-1-ene) with hydrogen terminated silicon (001). Removal of the t-BOC protecting group yields an aminodecane-modified silicon surface. The resultant amino groups can be coupled to thiol-modified oligodeoxyribonucleotides using a heterobifunctional crosslinker, permitting the preparation of DNA **arrays**. Two methods for controlling the surface d. of oligodeoxyribonucleotides were explored: in the first, binary mixts. of 10-aminodec-1-ene and dodecene were utilized in the initial UV-mediated coupling reaction; a linear relationship was found between the mole fraction of aminodecene and the d. of DNA hybridization sites. In the second, only a portion of the t-BOC protecting groups was removed from the surface by limiting the time allowed for the deprotection reaction. The oligodeoxyribonucleotide-modified surfaces were extremely stable and performed well in DNA hybridization assays. These surfaces provide an alternative to gold or glass for surface immobilization of oligonucleotides in DNA **arrays** as well as a route for the coupling of nucleic acid biomol. recognition elements to semiconductor materials.
REFERENCE COUNT: 55 THERE ARE 55 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 4 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:636926 CAPLUS
DOCUMENT NUMBER: 133:345235
TITLE: Preparation of DNA and protein micro **arrays** on glass slides coated with an agarose film
AUTHOR(S): Afanassiev, Victor; Hanemann, Vera; Wolfl, Stefan
CORPORATE SOURCE: Hans-Knoll-Institut fur Naturstoff-Forschung, Jena, D-07745, Germany
SOURCE: Nucleic Acids Research (**2000**), 28(12), e66, ii-v
CODEN: NARHAD; ISSN: 0305-1048
PUBLISHER: Oxford University Press
DOCUMENT TYPE: Journal

LANGUAGE: English

AB A thin layered agarose film on microscope slides provides a versatile support for the preparation of arrayed mol. libraries. An activation step leading to the formation of aldehyde groups in the agarose creates reactive sites that allow **covalent immobilization** of mols. containing amino groups. **Arrays** of oligonucleotides and PCR products were prepared by tip printing. After hybridization with complementary fluorescence labeled nucleic acid probes strong fluorescence signals of sequence-specific binding to the immobilized probes were detected. The intensity of the fluorescence signals was proportional to the relative amount of immobilized oligonucleotides and to the concentration of the fluorescence labeled probe. We also used the agarose film-coated slides for the preparation of protein **arrays**. In combination with specific fluorescence labeled antibodies these protein **arrays** can be used for fluorescence linked immune assays. With this approach different protein tests can be performed in parallel in a single reaction with minimal amts. of the binding reagents.

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 5 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:401982 CAPLUS

DOCUMENT NUMBER: 133:13393

TITLE: Method for efficiently immobilizing oligonucleotide on a carrier via a covalent bond

INVENTOR(S): Ueda, Minoru; Okamoto, Sachiko; Ozaki, Aya; Mineno, Junichi; Kimizuka, Fusao; Asada, Kiyozo; Kato, Ikunoshin

PATENT ASSIGNEE(S): Takara Shuzo Co., Ltd., Japan

SOURCE: PCT Int. Appl., 39 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000034457	A1	20000615	WO 1999-JP6867	19991208 <--
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 1138762	A1	20011004	EP 1999-959692	19991208
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				

PRIORITY APPLN. INFO.: JP 1998-351276 A 19981210
WO 1999-JP6867 W 19991208

AB A method is described for efficiently immobilizing an oligonucleotide on a carrier (e.g., glass, quartz) via a covalent bond (between an amino group introduced in an oligonucleotide and an aldehyde group held on a carrier) with a spacer by spotting a buffer (e.g., morpholine buffer, carbonate buffer) containing the oligonucleotide onto the carrier. A method is also claimed for detecting a target nucleic acid by hybridization using the immobilized oligonucleotide prepared by this method.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 6 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:258571 CAPLUS
DOCUMENT NUMBER: 133:14211
TITLE: Integration of layered redox proteins and conductive supports for bioelectronic applications
AUTHOR(S): Willner, Itamar; Katz, Eugenii
CORPORATE SOURCE: Institute of Chemistry, The Hebrew University of Jerusalem, Jerusalem, 91904, Israel
SOURCE: Angewandte Chemie, International Edition (**2000**), 39(7), 1181-1218
CODEN: ACIEF5; ISSN: 1433-7851
PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English

AB Integration of redox enzymes with an electrode support and formation of an elec. contact between the biocatalysts and the electrode is the fundamental subject of bioelectronics and optobioelectronics. This review, with 254 refs., addresses the recent advances and the scientific progress in elec. contacted, layered enzyme electrodes, and discusses the future applications of the systems in various bioelectronic devices, for example, amperometric biosensors, sensoric **arrays**, logic gates, and optical memories. This review presents the methods for the **immobilization** of redox enzymes on electrodes and discusses the **covalent** linkage of proteins, the use of supramol. affinity complexes, and the reconstitution of apo-redox enzymes for the nanoengineering of electrodes with protein monolayers of electrodes with protein monolayers and multilayers. Elec. contact in the layered enzyme electrode is achieved by the application of diffusional electron mediators, such as ferrocene derivs., ferricyanide, quinones, and bipyridinium salts. Covalent tethering of electron relay units to layered enzyme electrodes, the crosslinking of affinity complexes formed between redox proteins and electrodes functionalized with relay-cofactor units, or surface reconstitution of apo-enzymes on relay-cofactor-functionalized electrodes yield bioelectrocatalytic electrodes. The application of the functionalized electrodes as biosensor devices is addressed and further application of elec. "wired" enzymes as catalytic interfaces in biofuel cells is discussed. The organization of sensor **arrays**, self-calibrated biosensors, or gated bioelectronic devices requires the microstructuring of biomaterials on solid supports in the form of ordered micro-patterns. For example, light-sensitive layers composed of azides, benzophenone, or diazine derivs. associated with solid supports can be irradiated through masks to enable the patterned covalent linkage of biomaterials to surfaces. Alternatively, patterning of biomaterials can be accomplished by noncovalent interactions (such as in affinity complexes between avidin and a photolabeled biotin, or between an antibody and a photoisomerizable antigen layer) to provide a means of organizing protein microstructures on surfaces. The organization of patterned hydrophilic/hydrophobic domains on surfaces, by using photolithog., stamping, or micromachining methods, allows the selective patterning of surfaces by hydrophobic, noncovalent interactions. Photoactivated layered enzyme electrodes act as light-switchable optobioelectronic systems for the amperometric transduction of recorded photonic information. These systems can act as optical memories, biomol. amplifiers, or logic gates. The photoswitchable enzyme electrodes are generated by the tethering of photoisomerizable groups to the protein, the reconstitution of apo-enzymes with semisynthetic photoisomerizable cofactor units, or the coupling of photoisomerizable electron relay units.

REFERENCE COUNT: 74 THERE ARE 74 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 7 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:225030 CAPLUS
DOCUMENT NUMBER: 133:172660
TITLE: Comparison between Different Strategies of Covalent

Attachment of DNA to Glass Surfaces to Build DNA Microarrays
AUTHOR(S): Zammatteo, Nathalie; Jeanmart, Laurent; Hamels, Sandrine; Courtois, Stephane; Louette, Pierre; Hevesi, Laszlo; Remacle, Jose
CORPORATE SOURCE: Laboratoire de Biochimie Cellulaire, Facultes Universitaires N.-D. de la Paix, Namur, 5000, Belg.
SOURCE: Analytical Biochemistry (**2000**), 280(1), 143-150
CODEN: ANBCA2; ISSN: 0003-2697
PUBLISHER: Academic Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB DNA microarray is a powerful tool allowing simultaneous detection of many different target mols. present in a sample. The efficiency of the **array** depends mainly on the sequence of the capture probes and the way they are attached to the support. The coupling procedure must be quick, covalent, and reproducible in order to be compatible with automatic spotting devices dispensing tiny drops of liqs. on the surface. We compared several coupling strategies currently used to covalently graft DNA onto a glass surface. The results indicate that fixation of aminated DNA to an aldehyde-modified surface is a choice method to build DNA microarrays. Both the coupling procedure and the hybridization efficiency have been optimized. The detection limit of human cytomegalovirus target DNA amplicons on such DNA microarrays has been estimated to be 0.01 nM by fluorescent detection. (c) 2000 Academic Press.
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 8 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:194696 CAPLUS
DOCUMENT NUMBER: 133:14218
TITLE: Combined atomic force microscopy (AFM), X-ray photoelectron spectroscopy (XPS) and quartz crystal microbalance (QCM) studies of glucose oxidase (GOx) immobilised onto self-assembled monolayer on the gold film
AUTHOR(S): Losic, Dusan; Gooding, J. Justin; Shapter, Joe; Erokin, Paul; Short, Ken
CORPORATE SOURCE: Faculty of Science and Engineering, The Flinders University of South Australia, Adelaide, 5001, Australia
SOURCE: Proceedings - Australian Conference on Nuclear Techniques of Analysis (**1999**), 11th, 213-217
CODEN: PCTAD7; ISSN: 0156-3602
PUBLISHER: Australian Institute of Nuclear Science and Engineering
DOCUMENT TYPE: Journal
LANGUAGE: English
AB In fabrication of biosensors, self-assembled monolayers (SAM) are an attractive method of immobilizing enzymes at electrode surface since it allows precise control over the amount and spatial distribution of the immobilized enzyme. The covalent attachment of glucose oxidase (GOx) to a carboxylic terminated SAM chemisorbed onto gold films was achieved via carbodiimide activation of the carboxylic acids to a reactive intermediate susceptible to nucleophilic attack by amines on free lysine chains of the enzyme. Atomic force microscopy (AFM), XPS and quartz crystal microbalance (QCM) measurements were used for characterization of GOx modified gold surfaces. Tapping mode AFM studies have revealed that GOx mols. form slightly disordered **arrays** of pentagonal or hexagonal clusters. Observed features of immobilized GOx are distributed as a sub-monolayer on the SAM surface which has allowed visualization of native and unfolded enzyme structure. The presence of the SAM and enzyme on the gold surface was detected by XPS spectroscopy. Spectra show typical peaks for the C

1s, O 1s and N 1s regions. A kinetic study of the adsorption of GOx onto activated SAM using in-situ QCM allowed determination the amount of immobilized GOx on the layer and consequently the optimal immobilization conditions. Performance parameters of the biosensor such as sensitivity to glucose concentration as a function of enzyme loading were evaluated amperometrically using the redox mediator p-benzoquinone.

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 9 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:140565 CAPLUS
DOCUMENT NUMBER: 132:176585
TITLE: Covalent attachment of nucleic acid molecules onto solid phases via disulfide bonds
INVENTOR(S): Anderson, Steve; Rogers, Yu-Hui
PATENT ASSIGNEE(S): Orchid Biocomputer, Inc., USA
SOURCE: U.S., 14 pp., Cont.-in-part of U.S. 5,837,860.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6030782	A	20000229	US 1997-975862	19971121 <--
US 5837860	A	19981117	US 1997-812010	19970305 <--
PRIORITY APPLN. INFO.:			US 1997-812010	A2 19970305

AB Nucleic acid mols. are immobilized reversibly onto solid-phases with reversible disulfide bonds for nucleic acid mol. **array** preparation A solid phase surface is coated with mercaptosilane HS-L-Si(Y)(Z)X [L = (CH2)n, (-(CH2)n-aromatic-(CH2)n-, or aromatic group (n ≥ 1)); X = alkoxy, acyloxy, halo; Y and Z = alkoxy, acyloxy, halo, or nonhydrolyzable inert group] or disulfidesilane RS-S-L-Si(Y)(Z)X (L, X, Y, Z as above; R = nonhydrolyzable group), which is coupled to sulfhydryl- or disulfide-modified nucleic acid mols. via disulfide bonds. These methods can be used to prepare reusable nucleic acid mol. **arrays** with high specificity and high efficiency. Glass slides are etched and then treated with HS(CH2)3Si(OMe)3 in an acidic buffer in aqueous EtOH, cured, and dried. The cured slides are treated with 5'-disulfide modified oligonucleotides in a carbonate buffer to produce a disulfide bond between the oligonucleotide and the silane layer (the disulfide exchange reaction). GBA (Genetic Bit Anal.) primers having a poly-T spacer arm are immobilized by the disulfide exchange reaction onto glass slides for the typing of single nucleotide polymorphisms, the immediately 3'-distal sequences of which are complementary to the primers.

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 10 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2000:31381 CAPLUS
DOCUMENT NUMBER: 132:74513
TITLE: Covalent attachment of oligonucleotide probes to derivatized polypropylene supports
INVENTOR(S): Rampal, Jang B.
PATENT ASSIGNEE(S): Beckman Coulter, Inc., USA
SOURCE: U.S., 18 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6013789	A	20000111	US 1998-26742	19980220 <--
PRIORITY APPLN. INFO.:			US 1998-26742	19980220

AB Disclosed herein is a method for attaching pre-synthesized oligonucleotides to a polypropylene support medium. Most preferably, a polypropylene film is aminated by a plasma discharge in the presence of ammonia gas. An oligonucleotide having a terminal phosphate is activated in the presence of an imidazole (N-methylimidazole or 4,5-dicyanoimidazole) and a carbodiimide (EDC, 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide) to form a phosphorimidazolide. The activated oligonucleotide becomes immobilized by forming a phosphoramidate bond with the aminated polypropylene. The invention can be used to construct oligonucleotide **arrays** for hybridization assays.

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 11 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1999:331955 CAPLUS
DOCUMENT NUMBER: 131:194952
TITLE: Design of Oligonucleotide **Arrays** at Interfaces
AUTHOR(S): Boncheva, Mila; Scheibler, Lukas; Lincoln, Per; Vogel, Horst; Aakerman, Bjoern
CORPORATE SOURCE: Department of Physical Chemistry, Chalmers University of Technology, Goeteborg, S-412 96, Swed.
SOURCE: Langmuir (**1999**), 15(13), 4317-4320
CODEN: LANGD5; ISSN: 0743-7463
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The surface attachment and detection of DNA probes are essential in the design of nucleic acid-based biosensors. A new strategy for the **covalent immobilization** of single-stranded oligonucleotides on gold-covered planar supports is presented. Optimization of the surface d. in the resulting DNA **arrays** permits a high hybridization efficiency to be achieved. Surface plasmon resonance and, for the first time, ATR-FTIR spectroscopy are used to follow in situ the oligonucleotide layer formation and the subsequent complementary strand hybridization. Such well-defined, covalently immobilized oligonucleotide **arrays** can find application in the development of novel DNA-based sensors for mutation detection and gene mapping as well as in studies of nucleic acid-ligand interactions.

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 12 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1999:309643 CAPLUS
DOCUMENT NUMBER: 131:126035
TITLE: Versatile derivatization of solid support media for covalent bonding on DNA-microchips
AUTHOR(S): Beier, Markus; Hoheisel, Jorg D.
CORPORATE SOURCE: Functional Genome Analysis, Deutsches Krebsforschungszentrum, Heidelberg, D-69120, Germany
SOURCE: Nucleic Acids Research (**1999**), 27(9), 1970-1977
CODEN: NARHAD; ISSN: 0305-1048
PUBLISHER: Oxford University Press
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A chemical was developed that permits on DNA-**arrays** both the **covalent immobilization** of pre-fabricated nucleic acids-such as oligonucleotides, PCR-products or peptide nucleic acid oligomers-and the in situ synthesis of such compds. on either glass or

polypropylene surfaces. Bonding was found to be stable even after some 30 cycles of stripping. Due to a dendrimeric structure of the linker mol., the loading can be modified in a controlled manner and increased beyond the capacity of glass without neg. effects on hybridization efficiency. Also, the chemical warrants the modulation of other surface properties such as charge or hydrophobicity. Preferentially, attachment of nucleic acids takes place only via the terminal amino-group of amino-modified oligonucleotides or the terminal hydroxyl-group of unmodified mols. so that the entire mol. is accessible to probe hybridization. This derivatization represents a support chemical versatile enough to serve nearly all current forms of DNA-**arrays** or microchips.

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 13 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1999:220206 CAPLUS
DOCUMENT NUMBER: 130:249124
TITLE: Method for the detection and isolation of biomolecules via molecular recognition using immobilized pyranosyl nucleotide supramolecular structures
INVENTOR(S): Windhab, Norbert; Miculka, Christian; Hoppe, Hans-Ullrich
PATENT ASSIGNEE(S): Hoechst A.-G., Germany
SOURCE: Ger. Offen., 14 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19741716	A1	19990325	DE 1997-19741716	19970922 <--
CA 2303086	AA	19990401	CA 1998-2303086	19980921 <--
WO 9915893	A1	19990401	WO 1998-EP6001	19980921 <--
W: AU, BR, CA, JP, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
AU 9913340	A1	19990412	AU 1999-13340	19980921 <--
AU 757912	B2	20030313		
EP 1018007	A1	20000712	EP 1998-956830	19980921 <--
R: AT, BE, CH, FR, GB, IT, LI, NL, SE				
BR 9812490	A	20000926	BR 1998-12490	19980921 <--
JP 2001517795	T2	20011009	JP 2000-513140	19980921

PRIORITY APPLN. INFO.: DE 1997-19741716 A 19970922
WO 1998-EP6001 W 19980921

AB The invention concerns biosensors for the detection of mols. that are composed of an **array** of **immobilized** supramol. structures that have non-**covalent** binding sites for the receptor mols.; the receptor mols. are selected in a manner that they recognize the target mols. and they are labeled; the receptors recognize the target mols. immunol.; the receptor mol. with the captured target is hybridized to the immobilized **array** of the biosensor. The hybridized complex can be detected by the sensor in various ways, e.g. by fluorescence, change in electrode potential etc. Changing thermodn. parameters, e.g. concentration, temperature, the hybridized receptor-target complex can be removed from the surface and used in further procedures. The immobilized binding mols. are nucleic acid derivs. that differ from those in biol. samples; e.g. pyranosyl nucleotides, and pyranosyl RNAs; the immobilized binding mols. can hybridize several types of receptor mols. The receptor mols. are chosen from chemical libraries, peptide libraries; several receptor mols. that recognize different parts of the target mols. are used; the recognizing peptide/protein part of the receptor is bound

via linkers to the hybridizing part. The method can be used in combination with biochip techniques for drug screening, pesticide and herbicide research, for anal. and production of catalysts.

L56 ANSWER 14 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1999:187354 CAPLUS
DOCUMENT NUMBER: 130:350879
TITLE: A novel microtiter plate based method for identification of B-cell epitopes
AUTHOR(S): Gregorius, Klaus; Dalum, Iben; Freisleben, Marianne; Mouritsen, Soren; Elsner, Henrik I.
CORPORATE SOURCE: M and E Biotech A/S, Horsholm, DK-2970, Den.
SOURCE: Journal of Peptide Science (**1999**), 5(2), 75-82
CODEN: JPSIEI; ISSN: 1075-2617
PUBLISHER: John Wiley & Sons Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A new type of microtiter plate capable of binding biomols. covalently in a one step procedure was used to map linear B-cell epitopes in two different proteins using a peptide-based solid phase immunoassay. The method was compared with a conventional immobilization method using passive adsorption to microtiter plates. An **array** of 15-mer peptides, overlapping by five amino acids, representing the entire sequences of ubiquitin and murine tumor necrosis factor-α, resp., was synthesized. The peptides were immobilized covalently using the new, specialized microtiter plates or non-covalently using conventional ELISA microtiter plates of the high binder type. Subsequently, specific antisera to ubiquitin or murine tumor necrosis factor-α were added to identify potential linear B-cell epitopes. All peptides, which were recognized on the conventional microtiter plates, were also recognized on the plates with the covalently bound peptides. In addition, the **covalent immobilization** method revealed epitopes that were not identified using the method for non-covalent binding although the peptides were in fact present on the non-covalent binding surface. The interaction with the hydrophobic surface of the conventional microtiter plate apparently interfered neg. with antibody recognition. The covalently binding microtiter plates described here could be useful for identification of new B-cell epitopes in protein antigens.
REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 15 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1999:24966 CAPLUS
DOCUMENT NUMBER: 130:205645
TITLE: Immobilization of oligonucleotides onto a glass support via disulfide bonds: a method for preparation of DNA microarrays
AUTHOR(S): Rogers, Yu-Hui; Jiang-Baucom, Ping; Huang, Zhi-Jian; Bogdanov, Valery; Anderson, Stephen; Boyce-Jacino, Michael T.
CORPORATE SOURCE: Alpha Center, Orchid Biocomputer, Inc., Baltimore, MD, 21224, USA
SOURCE: Analytical Biochemistry (**1999**), 266(1), 23-30
CODEN: ANBCA2; ISSN: 0003-2697
PUBLISHER: Academic Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The covalent attachment of disulfide-modified oligonucleotides to a mercaptosilane-modified glass surface is described. This method provides an efficient and specific **covalent** attachment chemical for **immobilization** of DNA probes onto a solid support. Glass slides were derivatized with 3-mercaptopropyl silane for attachment of 5-prime

disulfide-modified oligonucleotides via disulfide bonds. An attachment d. of approx. 3+105 oligonucleotides/μm2 was observed Oligonucleotides attached by this method provided a highly efficient substrate for nucleic acid hybridization and primer extension assays. In addition, we have demonstrated patterning of multiple DNA probes on a glass surface utilizing this attachment chemical, which allows for **array** densities of at least 20,000 spots/cm2. (c) 1999 Academic Press.
REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 16 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1998:618855 CAPLUS
DOCUMENT NUMBER: 129:226631
TITLE: Covalent attachment of nucleic acid molecules onto solid phases via disulfide bonds
INVENTOR(S): Anderson, Stephen; Rogers, Yu-hui
PATENT ASSIGNEE(S): Molecular Tool, Inc., USA
SOURCE: PCT Int. Appl., 40 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9839481	A1	19980911	WO 1998-US4114	19980304 <--
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 5837860	A	19981117	US 1997-812010	19970305 <--
CA 2252911	AA	19980911	CA 1998-2252911	19980304 <--
AU 9865402	A1	19980922	AU 1998-65402	19980304 <--
AU 739010	B2	20011004		
EP 910670	A1	19990428	EP 1998-911457	19980304 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2000510710	T2	20000822	JP 1998-538691	19980304 <--
PRIORITY APPLN. INFO.:			US 1997-812010 A	19970305
			WO 1998-US4114 W	19980304

OTHER SOURCE(S): MARPAT 129:226631
AB Nucleic acid mols. are immobilized reversibly onto solid-phases with reversible disulfide bonds for nucleic acid mol. **array** preparation A solid phase surface is coated with mercaptosilane, e.g., HS-L-Si(Y)(Z)X [L = (CH2)n, (-(CH2)n-aromatic-(CH2)n-, or aromatic group (n .gtorsim. 1)); X = alkoxy, acyloxy, halo; Y and Z = alkoxy, acyloxy, halo, or nonhydrolyzable inert group], which is coupled to sulfhydryl- or disulfide-modified nucleic acid mol. via a disulfide bond. These methods can be used to prepare reusable nucleic acid mol. **arrays** with high specificity and high efficiency. Glass slides are etched and then treated with HS(CH2)3Si(OMe)3 in an acidic buffer in aqueous EtOH, cured, and dried. The cured slides are treated with 5'-disulfide modified oligonucleotides in a carbonate buffer to produce a disulfide bond between the oligonucleotide and the silane layer (the disulfide exchange reaction). GBA (Genetic Bit Anal.) primers having a poly-T spacer arm are immobilized by the disulfide exchange reaction onto glass slides for the typing of single nucleotide polymorphisms, the immediately 3'-distal sequences of which are complementary to the primers.
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS

RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 17 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1997:283725 CAPLUS
DOCUMENT NUMBER: 126:324555
TITLE: Fast Temporal Response Fiber-Optic Chemical Sensors Based on the Photodeposition of Micrometer-Scale Polymer **Arrays**
AUTHOR(S): Healey, Brian G.; Walt, David R.
CORPORATE SOURCE: Max Tishler Laboratory for Organic Chemistry, Tufts University, Medford, MA, 02155, USA
SOURCE: Analytical Chemistry (**1997**), 69(11), 2213-2216
CODEN: ANCHAM; ISSN: 0003-2700
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Fiber-optic chemical sensor microarrays for the detection of pH and O2 were developed with subsecond response times. Sensor microarrays are fabricated by the **covalent immobilization** (pH sensor **arrays**) or the phys. entrapment (O2 sensor **arrays**) of fluorescent indicators in photodeposited polymer matrixes on optical imaging fibers. Polymer microarrays are comprised of thousands of individual elements photodeposited as hemispheres such that each element of the sensor **array** is coupled directly to a discrete optical element of the imaging fiber and is not in contact with other neighboring elements. Because of the hemispherical shape and the individuality of the **array** elements, diffusion of analyte to the sensor elements is dominated by radial diffusion, resulting in a rapid response time. PH-sensitive **arrays** based on fluorescein respond to a 1.5-unit pH change within 300 ms, while the O2-sensitive **arrays** respond to O2 changes within 200 ms (90% of steady state response).

L56 ANSWER 18 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1996:487411 CAPLUS
DOCUMENT NUMBER: 125:189895
TITLE: Surface **arrays** of energy absorbing polymers enabling covalent attachment of biomolecules for subsequent laser-induced uncoupling/desorption
AUTHOR(S): Voivodov, Kamen I.; Ching, Jesus; Hutchens, T. William
CORPORATE SOURCE: Mol. Anal. Syst., Houston, TX, 77056, USA
SOURCE: Tetrahedron Letters (**1996**), 37(32), 5669-5672
CODEN: TELEAY; ISSN: 0040-4039
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Synthetic polymers with desirable film-forming characteristics were chemical modified to incorporate, covalently, UV energy-absorbing mols. (EAM) of a type used for matrix-assisted laser desorption/ionization (MALDI) time-of-flight mass spectrometry. The polymer-bound EAM were activated to covalently bind macromols., e.g., peptides, through the carboxyl group of the bound EAM. The EAM was shown to act as a photolabile macromol. tether. Biomols. covalently bound to surface **arrays** of EAM-polymer were uncoupled and desorbed/ionized with single pulses of laser irradiation

L56 ANSWER 19 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1996:217236 CAPLUS
TITLE: Site-directed mutagenesis of enzymes to facilitate controlled immobilization for bioreactors and biosensors
AUTHOR(S): Huang, Wei; Bachas, Leonidas G.; Bhattacharyya, Dibakar

CORPORATE SOURCE: Department Chemistry, University Kentucky, Lexington, KY, 40506, USA
SOURCE: Book of Abstracts, 211th ACS National Meeting, New Orleans, LA, March 24-28 (**1996**), BIOT-080. American Chemical Society: Washington, D. C. CODEN: 62PIAJ
DOCUMENT TYPE: Conference; Meeting Abstract
LANGUAGE: English
AB **Immobilization** of enzymes by **covalent** attachment has many applications in the development of biosensors and bioreactors. Conventional chemical immobilization methods often result in random orientation of enzyme mols. on the immobilization surface and in a substantial decrease of the enzymic activity. In this presentation, the modification of enzymes by site-directed mutagenesis to facilitate their controlled immobilization will be described. The cysteine-free proteinase subtilisin was chosen as a model protein to demonstrate the feasibility of this approach. A single cysteine residue was introduced at a position away from the active site of the enzyme by site-directed mutagenesis. The genetically modified enzyme was then immobilized on several surfaces through the -SH group on the cysteine. Compared to the conventional random immobilization method, site-directed immobilization yields controlled two-dimensional enzyme **arrays** with a higher specific activity on the surface.

L56 ANSWER 20 OF 21 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1993:555125 CAPLUS
DOCUMENT NUMBER: 119:155125
TITLE: An amperometric glucose sensor based on isoporous crystalline protein membranes as immobilization matrix
AUTHOR(S): Neubauer, A.; Pum, D.; Sleytr, U. B.
CORPORATE SOURCE: Zent. Ultrastrukturforsch., Univ. Bodenkult., Vienna, A-1180, Austria
SOURCE: Analytical Letters (**1993**), 26(7), 1347-60 CODEN: ANALBP; ISSN: 0003-2719
DOCUMENT TYPE: Journal
LANGUAGE: English
AB S-layer ultrafiltration membranes (SUMs) with an active filtration layer composed of coherent two-dimensional, isoporous protein crystals (S-layers) have been used as matrix for immobilizing monolayers of enzymes. Since S-layers are formed by periodic repetition of identical protein subunits, functional groups are present on the crystalline **array** in an identical position and orientation. As a consequence monolayers of enzymes can bind in a geometrically well defined way. For the **covalent immobilization** of enzymes carboxyl groups from the S-layer protein were activated with carbodiimide and allowed to react with amino groups of the enzyme. SUMs were employed as a new type of immobilization matrix for the development of an amperometric glucose sensor using glucose oxidase (GOD) as the biol. active component. Glucose oxidase covalently bound to the surface of the S-layer protein retained approx. 40% of its activity. The enzyme loaded SUMs were covered with a layer of gold or platinum to function as working electrodes. These sensors yielded high signals (150nA/mm2/mmol glucose), fast response times (1-30s) and a linearity range up to 12 mM glucose. The stability under working conditions was more than 48 h. There was no loss in activity after a storage period of 6 mo.

L56 ANSWER 21 OF 21 BIOSIS COPYRIGHT (c) 2004 The Thomson Corporation. on STN
ACCESSION NUMBER: 2000:226063 BIOSIS
DOCUMENT NUMBER: PREV200000226063
TITLE: Electrostatically driven immobilization of peptides onto (maleic anhydride-alt-methyl vinyl ether) copolymers in aqueous media.
AUTHOR(S): Ladaviere, Catherine; Lorenzo, Carmen; Elaissari,

Abdelhamid; Mandrand, Bernard; Delair, Thierry [Reprint author]
CORPORATE SOURCE: Unite Mixte UMR-103, CNRS-bioMerieux, ENS-Lyon, 46, allee d'Italie, 69364, Lyon, France
SOURCE: Bioconjugate Chemistry, (March-April, 2000) Vol. 11, No. 2, pp. 146-152. print.
CODEN: BCCHES. ISSN: 1043-1802.
DOCUMENT TYPE: Article
LANGUAGE: English
ENTRY DATE: Entered STN: 7 Jun 2000
Last Updated on STN: 5 Jan 2002

AB The **covalent immobilization** of a model peptide onto the MAMVE copolymer, via the formation of amide bonds, occurred in moderate yields in aqueous conditions. The improvement of the grafting reaction was achieved by adding at the amino terminus of the model peptide a sequence (tag) of three positively charged amino acids, lysine or arginine, and by taking profit of electrostatic attractive interactions between the negatively charged copolymer and the tagged peptides. The arginine tag was more efficient than the lysine tag for enhancing the immobilization reaction, proving that the effect was due to an electrostic driving force. On the basis of these results, a tentative mechanism is discussed, and Scatchard plots pointed out two regimes of binding. With the first, at low polymer load (up to 50% of saturation for a lysine tag and 60-70% for an arginine tag), the binding occurred with a positive cooperative effect, the already bound peptide participating to the binding of others. A second one for higher coverages, for which the binding occurred with a negative cooperativity, and saturation was reached in the presence of a large excess of peptide.